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ABSTRACT

The factor structure, and thereby the underlying construct of the What I Think and Feel Test (WITF) was determined. The delineation of subscales of anxiety within this revision of the Children's Manifest Anxiety Scale was significant, since anxiety is a multidimensional characteristic. Responses of 329 children (grades 1-12) to the 28 anxiety items of the WITF were factor analyzed through principal factoring with interactions; oblique and orthogonal rotations were performed. A principal components solution was also obtained. The three factor varimax solution was retained as the most psychologically and statistically sound factorial solution. Consistent with current multidimensional theories of anxiety, three primary anxiety factors emerged which provided support for the construct validity of the new scale: (1) physiological manifestations of anxiety; (2) worry and oversensitivity; and (3) fear and difficulty in concentrating. (Implications for test interpretation are discussed). (RD)

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Factor Structure and Construct Validty of the Revised Children's Manifest Anxiety Scale (WITF)

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Abstract

Responses to the Revised-CMAS of 329 children from grades 1 through 12 were factor analyzed. Consistent with current multidimensional theories of anxiety, three primary anxiety factors emerged, supporting the construct validity of the new scale. Implications for interpretation of the revised scale are discussed.

Factor Structure and Construct Validity of "What I Think and Feel:" the Revised Children's Manifest Anxiety Scale

Reynolds and Richmond (1978) have recently revised the Children's Manifest Anxiety Scale (CMAS) (Castaneda, McCandless, & Palermo, 1956), renaming the instrument What I Think and Feel (WITF). Over the past two decades, the original CMAS has received substantial utilization by researchers and clinicians studying anxiety in children (see Reynolds & Richmond, 1978), as well as behavior therapists studying fear reduction (Melamed & Seigel, 1975; Scherer & Nakamura, 1968). A considerable body of research is now available suggesting anxiety is multidimensional in nature (Cattell & Scheier, 1961; Fenz & Epstein, 1965; Finch, Kendall, & Montgomery, 1974; Spielberger, 1972).

Factor analysis of the 1956 version of the CMAS by Finch et al. (1974) using a method of oblique rotation produced three anxiety factors: Factor 1, worry and oversensitivity; Factor 2, physiological; and Factor 3, concentration. According to Koppitz (1977), these three factors differentiate among children exhibiting different behavioral characteristics, a conclusion supported by Finch, Anderson, and Kendall's (1976) results.

The purpose of the present study is to determine the factor structure, and thereby the underlying construct, of the WITF. If three factors emerge consistent with those found by previous researchers, support will be indicated for the construct validity of the revised scale and make generalizations of validity studies from the original scale to the WITF more permissible. Since anxiety apparently exists as a multidimensional characteristic, the delineation of subscales of anxiety within the newer instrument will have obvious diagnostic and interpretive significance, as well as being useful to the researcher.

Method

Subjects

Participants for the study were 329 school age children in grades 1 through 12 (173 females, 156 males; 172 blacks, 157 whites). All were tested on the same day at their respective schools in a small urban community in the southeastern U.S. Although the researchers were not allowed to collect socioeconomic data, the school districts did agree to random selection of the classes at each grade level. The sample also constituted the sample for the development of the WITF and is described in greater detail elsewhere (Reynolds & Richmond, 1978).

Procedure

Responses of the 329 children to the 28 anxiety items of the WITF were factor analyzed through the method of principal factoring with iterations utilizing R^2 as initial communality estimates. Oblique (Oblimin) and orthogonal (Varimax) rotations were performed for 2, 3, 4, 5, and 6 factors. A principal components solution was also obtained as a comparison to Bledsoe's (1975) results.

Results and Discussion

The three factor Varimax solution was retained as the most psychologically and statistically sound factorial solution. Items and their loadings on each factor are presented in table 1. Factor 1 contains 9 items (1, 5, 9, 13, 17, 21, 25, 29, and 33) having a mean of 4.57, SD = 2.14, and is characterized

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Insert Table 1 about here

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primarily by Physiological manifestations of anxiety. The items of Factor 1 produce a Kuder-Richardson formula 20 (KR_{20}) reliability estimate of .65.

Factor 2 contains 10 items (2, 6, 10, 14, 18, 22, 26, 30, 34, and 37) having a mean of 5.39, SD = 2.34, and is characterized primarily by Worry and Oversensitivity. The 10 items of Factor 2 produce a KR_{20} reliability estimate of .64. Factor 3 contains 9 items (3, 7, 11, 15, 19, 23, 27, 31, and 35) having a mean of 3.88, SD = 2.14, and is characterized by fear and difficulty concentrating (Fear/Concentration). The 9 items of Factor 3 produce a KR_{20} reliability estimate of .60. As is apparent in table 1, the three factor varimax solution is relatively "clean", with but a single item (number 30) loading beyond .30 on more than 1 factor.

Essentially the same names of factors as used by Finch et al. (1974) were retained here due to the very close similarity between results of the two studies. Of 15 anxiety items loading on the three factors identified by Finch et al. (1974), 11 items were retained on the revision of the CMAS. Of the 11 items, 10 load highest on the same factors of the revised scale. When a principal component solution was obtained utilizing the same criteria as Bledsoe (1975), a single anxiety factor emerged which is highly consistent with Bledsoe's result.

Results of this study lend strong support to the construct validity of the WITF, and to contentions that anxiety is multidimensional in nature. When using the WITF with children referred due to emotional or behavioral problems, it becomes important to examine the three subscale, or factor, scores (Finch et al., 1976; Koppitz, 1977). Examining the child's anxiety level in reference solely to the total score may cause the psychologist to miss significant diagnostic information concerning the individual child. Likewise, the researcher may not uncover differential treatment effects on specific types of anxiety if limited to using the total score. However, the psychologist should remain appropriately cautious when using subscale

scores due to the relatively low reliabilities obtained by having a small number of items. Research demonstrating factorial invariance of the WITF across race, sex, and age will also be necessary as has been recommended for all personality (Katzenmeyer & Stenner, 1977) and cognitive instruments (Reynolds, 1978).

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Table 1

Factor loadings of items from the Revised-
Children's Manifest Anxiety Scale

Item No.	Item	Factor Loading* FAC 1	FAC 2	FAC 3
1	I have trouble making up my mind.	.36*	.16	.01
5	Often I have trouble getting my breath.	.33*	.15	.16
9	I get mad easily.	.31*	.13	.24
13	It is hard for me to get to sleep at night.	.48*	.07	.09
17	Often I feel sick in my stomach.	.34*	.27	.06
21	I am tired a lot.	.43*	.15	.24
25	I have bad dreams	.64*	.15	.09
29	I wake up scared some of the time.	.39*	.23	.11
33	I wiggle in my seat a lot.	.38*	.02	.15
2	I get nervous when things do not go the right way for me.	.14	.23*	.20
6	I worry a lot of the time.	.13	.47*	.09
10	I worry about what my parents will say to me.	.11	.40*	.22
14	I worry about what other people think about me.	.11	.37*	.14
18	My feelings get hurt easily.	.24	.37*	.19
22	I worry about what is going to happen.	.03	.66*	.18
26	My feelings get hurt easily when I am fussed at.	.13	.43*	.09
30	I worry when I go to bed at night.	.35	.40*	.07
34	I am nervous.	.27	.42*	.02
37	I often worry about something bad happening to me.	.29	.33*	.25
3	Others seem to do things easier than I can.	.07	.08	.46*
7	I am afraid of a lot of things.	.22	.20	.27*
11	I feel that others do not like the way I do things.	.02	.10	.50*
15	I feel alone even when there are people with me.	.12	.07	.31*
19	My hands feel sweaty.	.16	.11	.24*
23	Other children are happier than I.	.13	.12	.44*
27	I feel someone will tell me I do things the wrong way.	.09	.19	.41*
31	It's hard for me to keep my mind on my school work.	.30	.02	.37*
35	A lot of people are against me.	.07	.08	.41*
	Eigenvalue	4.42	0.91	0.86
	% Variance	71.4	14.7	14.0

* denotes highest loading